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Designing ICM projects for sustainability: Lessons from the Philippines and Indonesia

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Abstract

Integrated coastal management is rapidly expanding in the Philippines and Indonesia because of the urgent need to manage and protect the valuable coastal resources that occur along their extensive and diverse coastlines. In response to this need for coastal resource management, various multinational and bilateral donor projects have and are supporting various forms of coastal management. Although there are many successes in the implementation of these projects at a local scale and in the short term, many lack a full consideration of what is required to become sustainable beyond project life. The recent "Integrated Coastal Management Sustainability Research Project" has revealed valuable insights about what constitutes "sustainability" in coastal management implementation. Implications for project design to improve sustainability from this research effort are highlighted and include among others: (1) need to link management to improved biophysical conditions; (2) important role of stakeholder participation in the decision-making process; (3) contribution to economic returns and livelihood; (4) having adequate legal and policy framework in place; (5) having capacity for law enforcement; (6) building durable institutions beyond leadership changes; (7) role of the private sector in performing tasks; (8) avoiding becoming too dependent on the "project" vs. government functions; and (9) need for education and raising awareness to accomplish tasks. An analysis of donor-supported projects is made in relation to their inclusion of those factors that appear to influence long-term

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sustainability of coastal management. Factors being addressed vs. those that are lacking are highlighted. The strengths and weaknesses of different projects are also analyzed with the conclusion that important sustainability factors are still not being addressed by some projects although learning is occurring.

1. Introduction

Coastal management activities are rapidly expanding in the Philippines and Indonesia because of the urgent need to manage and protect the valuable coastal resources that occur along their extensive and diverse coastlines [1]. This is evidenced by numerous coastal or fisheries management projects of different forms supported by multinational and bilateral donors in collaboration with national and local governments in both countries. Such projects are attempting to fill the gap of support needed to adequately address the complexity of issues present in almost all coastal areas. Such issues range from destructive and over-fishing practices to increasing shoreline development and levels of pollution from both shoreline and upland sources as well as increasing poverty among coastal communities [2,3].

Integrated coastal management (ICM) is increasingly an accepted management framework to address coastal and marine environmental problems, conflicts and management needs [4–7]. A primary goal of most ICM and related projects is to achieve sustainable use of coastal resources. Sustainable use implies that mechanisms are put in place and are functional over a long period of time, beyond the length of a project time frame. Although there are many successes in the implementation of such projects at a local scale and in the short term, most lack a full consideration of what is required to become sustainable beyond the project life and to fully establish sustainable use systems.

External donor funded projects, through their preconceived goals, objectives and time frames, are often inclined to fail in part or at least to not be sustainable beyond their life. The dependence on external assistance creates both the potential for and the reality of non-sustainable ICM institutions and policies as projects are terminated and staff withdrawn. It has been observed in the Philippines that the majority of community-based coastal resource management projects were not maintained after the funding and external technical assistance ended [8,9].

Despite difficulties in implementation of ICM projects, investments continue to increase. In the Philippines alone, it is estimated that from 1974 to 2000, US$230 million has been invested in coastal resource management [10,11]. About 63% of this was from international donors, 36% from government appropriations and loan counterparts and 1% from local donors [12]. Given these investments in ICM and related projects to improve the status and management of coastal resources, the question is often raised about how to make them more sustainable for the long-term improvement of social, economic and environmental parameters in coastal areas.

To address the question of ICM sustainability, a multidisciplinary group of researchers, led by the School of Marine Affairs of the University of Washington,

undertook a 3-year research project on ICM sustainability in the Philippines and Indonesia. The ICM Sustainability Research Project (ICM-SRP) (described in detail in the introduction to this special issue) sought to determine the primary factors leading to ICM sustainability based on the records and observations of successes and failures, of several prominent ICM projects in both countries. The project analyzed different aspects of what influences sustainability of ICM through several sub-groups focusing on legal, socio-cultural, institutional, economic and biophysical aspects of ICM.

This paper draws from the findings of the ICM-SRP and applies these insights to the design of ICM projects that are donor supported. It analyzes the objectives and known results of donors in the Philippines and Indonesia that support ICM and their indicators for success of project achievements in relation to what is known about how projects become sustainable as determined by the ICM-SRP. The framework for analysis of 17 donor-assisted projects described in Section 3 is derived from the findings of the ICM-SRP although only five of the 17 projects were part of the ICM-SRP. In addition, broad and commonly accepted indicators for sustainable development such as poverty reduction, biophysical improvement and population management are also discussed in relation to the present implementation of ICM projects that often have more focused objectives.

2. Primary results of research on sustainability of ICM

To adequately evaluate how to improve the design of ICM projects for sustainability, it is useful to summarize the lessons learned from the ICM-SRP. The range of findings suggests the following prerequisites should be considered in the design and implementation of ICM projects for the gains to be sustainable through time.

2.1. Sustainable management of projects results in biophysical changes and benefits to community residents from these changes

The ICM-SRP and other studies have highlighted the link among coastal management interventions and resultant impacts on coastal environments. These effects were first observed in small marine protected areas (MPAs) in the Philippines where sanctuaries were shown to improve the quality of coral reef habitat, the quantity of fish biomass within the sanctuary and fish yields outside the no-fishing zone [13–16]. This well studied phenomena has implications for the sustainability of an MPA management approach since the improvements in the habitat, fish stock and fish yield or other ecosystem parameters contribute benefits to local stakeholders. Local fishers, tourism operators or other stakeholders usually notice these positive benefits immediately. In this manner, the biophysical improvements reinforce the protection and management of the resources or area of concern through tangible translations of these impacts (e.g., increased fish catches, improved reefs for visiting divers, etc.).

The association of successful MPA implementation with biophysical improvements has indeed promoted the use of MPAs as a common "best practice" within larger ICM projects. In this regard, most ICM projects support MPAs in some aspect of the project and use them to assure the stakeholder participants that biophysical improvement and its associated benefits will be forthcoming. The MPA is thus used to obtain the "buy-in" of stakeholders for management activities that are much broader than MPAs in scope.

Although ICM is intended to lead to positive biophysical change, many ICM projects cannot demonstrate this outcome because the design does not ensure short or even long-term gains for the coastal environment. Furthermore, not all biophysical changes are necessarily regarded as positive by all stakeholders. For example, a fisher may be mainly interested in improved environmental conditions leading to increased fish yields, which may either correspond to—or be inconsistent with—a more purely environmentalist interest in biodiversity conservation. For some resource users, the relation between improved environmental condition and stakeholder buy-in is frequently indirect, and mediated by more highly prioritized improvements in economic opportunities dependent on improved fish abundance [17]. Thus, measurable environmental gains are a necessary but insufficient condition for sustainability. These ICM projects, reflected in the growing number of MPAs in both countries, have endured beyond the project life under the control and maintenance of local communities and government [18].

2.2. *Stakeholder participation in ICM decision-making process*

The ICM-SRP findings as summarized in this volume all recognize the value of stakeholder participation in the decision-making process of ICM. The importance of participation has been recognized by studies starting in the 1980s up to the present [19–22]. Although it is easy to agree with the need for participation, it must be qualified and strategic, e.g., pertinent to problems being addressed and involving the most appropriate stakeholders. Comprehensive and intense stakeholder participation slows the planning process and makes it more expensive, at least in the short term. Thus, although needed to build local ownership of ICM activities and adaptive management, strategic means of building participation are needed to ensure it assists and does not hinder the overall process. Designing effective participation requires clarity about who should participate, about what is sought from participants, about how much authority over project design participants will have and how processes will be organized to insure the most effective and efficient use of participants' time.

The experience of the Coastal Resource Management Project (CRMPhil) in the Philippines was that participation needed to evolve with the project. This allowed project concerns and strategies for implementation to be incrementally internalized by the stakeholders at the local community and government levels [23]. It was also learned that a participatory process should start at the very local level with resource assessment by stakeholders. This helped fishers and other resource users to understand the magnitude of the coastal issues of concern for management. A planning process flow evolved through the project with the local government system

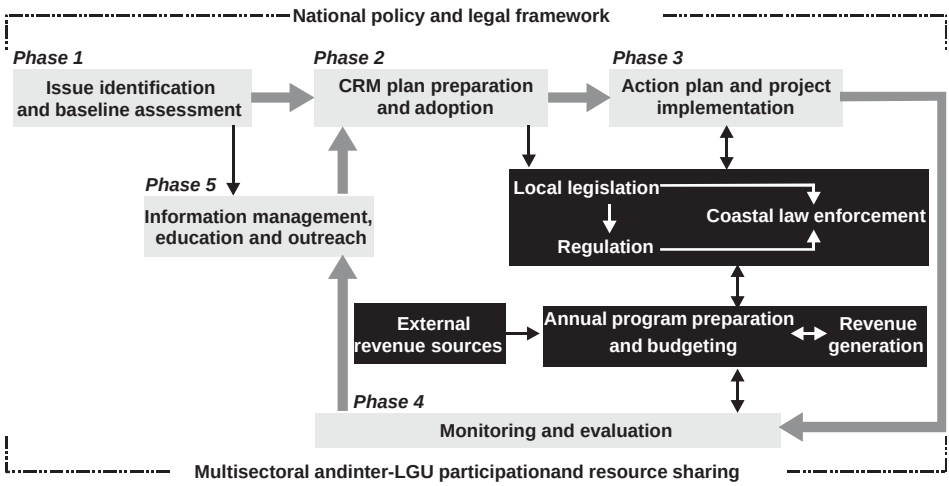

Fig. 1. Five-phase ICM planning process adapted for Philippine local governments.

of the Philippines shown in Fig. 1. This planning process starts with participatory coastal resource assessment (PCRA) that leads to action plans and implementation within the local government system. It helped to build a strong and lasting rapport between the coastal communities and their local government for improved ICM that has endured through time and now operates in more than 100 coastal municipalities and cities [24].

2.3. *Improved economic returns and income generation*

Improved economic returns and income generation are recognized as basic ingredients of sustainable ICM activities. Perceived increased economic benefits of management also increases stakeholder support for management. In some cases, enhanced income is dependent on improved fish catch or habitat quality affecting both fisheries and tourism related benefits [25–27]. The growing marine ecotourism industry in both countries attests to the potential for development of localized tourism economies that can provide support for coastal conservation. Combined with ICM projects, the sustainability of ICM can be improved by building on ecotourism revenues, if managed wisely [28]. Local tourism, like improved local fisheries, increases support for management. But, the reality of many coastal areas in these countries is that the potential for improved economic returns is not great and is very difficult to achieve. Thus, although ICM sustainability is enhanced by linking it to improved income generation when possible, this is not always easy. In some cases, efforts to increase income as an objective have derailed an otherwise good project because economic expectations could not be met as in the case of Bunaken Marine Park where local residents have expressed repeatedly the hope that tourism revenues could be shared with them. In others, the conflicting interests of local stakeholders,

such as fishers vs. beach resort owners, complicates project design. The practical challenge is balancing what may be perceived as the conflicting interests of fishers and tourism operators [29,30].

2.4. Sustainable projects require an adequate legal and policy framework

The ICM-SRP has provided ample evidence that the legal and policy framework for ICM is extremely important in achieving ICM objectives. In both the Philippines and Indonesia, significant national legal mandates for coastal management have shifted in favor of more responsive legal and institutional regimes in recent years. The Philippines relies on the Local Government Code of 1991 that effectively devolves most functions and responsibility for ICM to local government units for shoreline and near-shore waters to 15 km offshore. Also, the Philippine Fisheries Code of 1998 clarifies and strengthens local government management and endorses integrated management approaches. In addition, an Executive Order endorsing an ICM framework for the country is pending for signing. Indonesia has passed similar laws that shift some of the burden to provincial governments and involves local levels down to the village in decision-making.

Although adequate national legal authority is certainly a prerequisite for effective local action, it is probably more important to have an efficient and transparent legal and institutional arsenal at the local government level. The local laws and institutions help ensure continuing support and implementation as an ICM project evolves. Effective management requires that the national and local legal and institutional structures be mutually reinforcing. In the Philippines, the rapid spread of ICM through more than 100 local governments is partially due to the ICM project being carefully aligned with the planning, legal and revenue generating system of municipalities, cities and provinces. In this manner, the government did not have to make many changes except to start allocating resources for the ICM work. Having the processes fit easily within the local system facilitated smoother planning and implementation that primarily depended on local government personnel and resources, not those of the project. Also, the ICM project indicators were aligned with the national government's development indicators so that the objectives of both the project and the government were the same [31].

2.5. Improved capacity for law enforcement

The capacity for effective coastal law enforcement has emerged as an important determinant of sustainable ICM in both the Philippines and Indonesia. Although good law enforcement is at least partially dependent on the level of participation of local stakeholders in designing and implementing ICM plans, there are other critical elements for success. Participation improves the likelihood of effective law enforcement at a very localized scale for MPAs and near-shore fisheries management. Even shoreline management can be facilitated when people are educated about what is needed and engage in self-policing through volunteer groups. In the Philippines, the "*bantay dagat*" (guardians of the sea) organizations are effective at

policing the enforcement of community level ICM activities. However, for larger scale law enforcement problems, such as the illegal entry of commercial fishing boats, the illegal capture and sale of protected species or the chronic incidence of major pollution events, a more professional enforcement capacity is required. It has also been shown that enforcement is not always "equitable" with some issues being pursued more aggressively in the courts. For example, although small-scale illegal fishers are prosecuted regularly, illegal pollution discharge from shoreline sugar mills in the Philippines is ignored by enforcement officials [32].

The needs of professional coastal law enforcement are likely to exceed the institutional capacity at community and local government levels. Enforcement also necessitates effective coordination between local and national government agencies. Since these factors are rarely in place for coastal law enforcement and the laws are blatantly broken in many coastal areas, ICM projects must address these issues. If not addressed, the ICM-SRP has shown that coastal dwellers become frustrated with the ICM efforts, often give up hope and stop participating as predicted by Ostrom [33]. Where the coastal enforcement is effective through whatever combination of national and local government activity and community participation that is required within the legal and institutional system, ICM sustainability is significantly enhanced [34]. As was shown by CRMPhil and Coastal Resource Management Project, Indonesia (CRMIndo) in Northern Sulawesi, Indonesia, effective law enforcement increases success of the project in terms of participation, improvement of environmental conditions and even income in some areas where illegal fishing was destroying a previously rich fishing habitat [35].

For law enforcement to contribute in a sustainable manner, it must be perceived as equitable and legitimate. For example, the people at Nain Island in Bunaken Park feel like scapegoats, and resist the parks' rules [36]. Some fishers on Bunaken Island feel that regulations are being enforced in an arbitrary manner, not following the agreed plan but in favor of park visitors over traditional fishing. Such issues must be addressed to increase the sustainability of an ICM project.

2.6. *Building durable institutions beyond leadership change*

A common problem in all developing countries is the continuity of policies through changes in leadership. This is a particularly vexing problem in both Indonesia and Philippines where local leaders are often quite powerful and can have a major impact on local policies and the degree of enforcement. Since ICM is pursuing a sustainable development agenda, there are bound to be unpopular rules that need to be enforced. Stopping illegal fishing, illegal shoreline land use, mangrove cutting and others require political will and leadership. Effective management requires that new elected officials understand, support and continue to implement coastal policies and projects. The ICM-SRP identified several cases of losses in ICM progress when supportive leaders were replaced. In several cases, local mayors have supported illegal fishers or reversed the implementation of a successful MPA [37].

The continuity of support from local and national institutions and leaders is clearly beneficial to the sustainability of ICM. Suggestions on how to ensure this

continuity within the implementation of a project include: (a) participation of stakeholders in ICM planning and implementation helps to build a constituency that government leaders cannot ignore; (b) building advocacy among stakeholders; and (c) building support among a broad spectrum of community leaders.

Although the political cultures of both countries favor personalities over policies in selecting leaders, there are checks and balances that can help ensure continuity of policies despite leadership change. A lesson for ICM design is to be sensitive to local culture and leadership roles since in the long term these values will override short-term accomplishments of ICM and can easily undermine them. Being sensitive might mean accommodating local rituals or time schedules and not disrupting local chains of power that are not obvious to the causal observer.

2.7. Role of private sector in building sustainability and performing tasks

ICM policies and projects are strengthened by private sector support. This expected finding is important in areas where marine tourism interests are present or where industry can promote proper wastewater processing practices. Commercial scale private fishing boats can make a positive contribution if they decide to comply with the no-fishing limits of 15 km in the Philippines for example. Thus, for profit businesses that depend on marine and coastal resources and land should be encouraged to participate in the ICM design and implementation in a constructive manner. If they understand and support the required management options for sustainable use, they can make an important contribution to effective management.

Not all private sector participation is positive. If special interest groups dominate the management process and do not participate in a constructive manner, other stakeholders may be alienated. Conflicts of interest between resort owners and fishing communities may need to be addressed through formal and informal dispute resolution processes. In one case in the Philippines, the participation of tourism operators in decision-making processes negatively impacted ICM sustainability because of their dominant role [38]. In this case, the private sector owners were not sensitive to other resource users in the area and had different interests. But in the larger scheme, a more robust plan results with private sector participation.

Private sector may also contribute economically to support policies that they see are advantageous to their interests. In the Province of Bataan, Philippines, the Petron Foundation has initiated and maintained an ICM project in partnership with the local governments. Their interest is to improve relations with the local community where their refinery is located [39]. In this way, government and local stakeholders can partner with the private sector for mutual gains.

2.8. Avoiding becoming too dependent on projects vs. government functions

ICM projects, if designed with sustainability in mind, must analyze what responsibilities and tasks local government and other stakeholders are capable of assuming. The project will then consciously try to test this capacity and, if it is not sufficient, try to improve the capacity through training and facilitating learning by

doing. Thus, through an analytic and adaptive framework, an ICM project can assist the primary stakeholders to assume more responsibility from an early date and to assist in building the capacity to make that happen. In the CRMPhil experience, to effectively build the capacity of coastal law enforcement units, it was necessary to focus on helping them access resources, coordinate more effectively with multiple agencies and local governments (a new process for them) and develop skills specific to coastal laws and issues. In this manner, the law enforcement units have operated almost entirely separately from the ICM project but have improved their effectiveness through the ICM planning and learning process assisted by the project.

2.9. Need for education and raising awareness levels to accomplish tasks

Finally, educating multiple stakeholders at different levels of involvement, throughout the process directly influences ICM sustainability. All findings of the ICM-SRP point to the need for education and raising awareness so that those performing the tasks could fully appreciate the rationale and logic of the tasks. The more successful ICM projects have invested heavily in information, education and communication (IEC) materials and processes so that throughout the ICM process at all levels of government, IEC is available to help build understanding about the need and processes and to help build a constituency among policy makers for ICM. A review of ICM educational materials in the Philippines and Indonesia by Milne et al. [40] dramatically shows the range of opportunities for IEC in ICM and how essential it is for long-term success.

3. Donor objectives and deliverables for ICM in Philippines and Indonesia

Selected donor-assisted projects that have either been completed, are ongoing or are planned for the near future are discussed briefly below. There were selected because of their relatively large funding and long time duration and are generally thought to have or are making an important contribution to ICM in their countries of operation. These projects offer lessons for ICM sustainability that are helpful in analyzing to what extent ICM projects are addressing the issues of sustainability as discussed in Sections 2, 4 and 5.

3.1. Philippine projects (chronological by start date)

(1) *The Central Visayas Regional Project (CVRP) (1984–1992)*, supported by a World Bank (WB) loan, was a pilot project in community-based rural development. One of its components was watershed management, including near-shore fisheries development in four provinces. Interventions included mangrove reforestation, coral reef protection and marine sanctuary establishment, artificial reef and fish aggregating device installation, and mariculture. A major finding from a 1995 assessment of CVRP was that baseline information was insufficient to evaluate the results [41,42]. Although many initial site surveys were conducted, the information

was not systematically stored and used to support management decisions, nor to later evaluate results. Thus, many of the potential lessons from such a comprehensive and innovative program were lost because they could not be measured.

(2) *The Marine Conservation and Development Program (MCDP) (1984–1986)* of Silliman University, supported by the United States Agency for International Development (USAID), operated on three small islands in the Central Visayas (Apo, Pamilacan and Balicasag Islands). This relatively small project generated important examples for community-based coral reef management that exemplified the potential sustainable use of coral reef fisheries and habitat [43]. The lessons from these three islands have increased over time as they continue to prosper and attest to the role of communities and participatory community methods in sustaining management efforts in spite of changes in government personnel and policies.

(3) *The Lingayen Gulf Coastal Area Management Program (LGCAMP) (1986–1992)* was one of the six CRM planning areas in Southeast Asia supported by USAID and the ASEAN countries. This was the first attempt at ICM in the Philippines for one large gulf in northern Luzon comprised of two provinces and 20 municipalities. The project first generated a comprehensive database for planning which included reliable fisheries data analysis to measure fishing effort reduction needs since the most serious issue of the area was over-fishing [44]. The difficulty of implementing the recommendations on fishing effort forced the planning process to diverge toward education, generation of political will and development of CRM plans at the municipal level. This program initiated an institutional arrangement to coordinate planning and implementation that is a model for the country although still not completely effective [45].

(4) *The Fisheries Sector Program (FSP) (1991–1997)* implemented by the Department of Agriculture (DA) with support from an Asian Development Bank (ADB) loan. This large program attempted to generate and implement CRM plans in 12 bays known for their rich fisheries, management problems and growing poverty of coastal residents. This government program tested the ability of the DA to incorporate community-based management as a mainstream approach to CRM. A primary strategy was to generate bay-wide CRM plans through the involvement of fishing communities by contracting non-government organizations to facilitate the planning and community organization process. The results have raised awareness about the need for management and in a few cases improved fishery management in the bays. But, as with the CVRP, the FSP failed to establish and use a simple set of baseline information upon which evaluation and management decisions could be based. A new version of FSP, the Fisheries Resource Management Project (FRMP, see (8)), started in 1999 for 5 years and a target of 18 bays.

(5) *The Tubbataha National Marine Park (TNMP) (1989–present)* is implemented by World Wildlife Fund (WWF) and the Department of Environment and Natural Resources (DENR) with funding from the Global Environment Fund (GEF), WWF, the private sector and user fees. Tubbataha Park was declared the Philippine's first National Marine Park in 1988 and became a World Heritage Site in 1994 because of its globally significant biodiversity. Park management is multi-sector within the Protected Area Management Board (PAMB) with support from WWF.

Management centers on the implementation of an integrated management plan that was drafted in 1990 and formally adopted in 1998. Implementation activities focus on protecting the coral reef atoll through law enforcement, research and monitoring. The management plan has evolved to include tourism rules and guidelines; a livelihood operation plan for neighboring communities; long-term research and monitoring protocol; new legislation; education among stakeholders; and the implementation of user fees to support conservation management.

(6) *Partnership for Environmental Management of the Seas of East Asia (PEMSEA) (1994–present)* is a GEF project in the Eastern Asian Seas region implemented by United Nations Development Program (UNDP) to build stronger regional partnerships to address the major coastal and marine environmental problems of the region. One program component focuses directly on ICM, establishing six regional sites implementing ICM to effectively manage coastal resources at the local government level. This project has two Philippine sites, Bataan and Batangas Bay, and one Indonesian site, Bali. In each site, a 25-year strategic environmental plan for sustainable development of coastal and marine resources is developed in addition to short-term action plans to cover critical environmental management issues, such as ecotourism and waste management. Training and capacity building activities encourage local capabilities to plan and manage and implement ICM programs using their own resources.

(7) *The Coastal Resource Management Project (CRMPhil) (1996–2004)* is a technical assistance project of the DENR, funded by USAID. CRMPhil espoused multidisciplinary, multi-sector (crossing political and institutional as well as environmental boundaries), multistage, and participatory processes of planning, implementing and monitoring for coastal management as learned from past efforts in CRM [46]. CRMPhil promoted these approaches by collaborating with municipal and national government and other donor-assisted projects focused on the coastal environment and its governance. The CRMPhil developed a planning, monitoring and evaluation system for ICM for local government units that can be self-sustaining once it is operating within a given government unit. The CRMPhil initiated improved coastal management in 113 municipalities covering about 3500 km of coastline that constitute the ''learning and expansion areas'' of the project all of which have developed ICM plans and interventions. It has also championed the provision of technical assistance for information management and other guidance from nation and provincial government to municipal and city governments for ICM.

(8) *The Fisheries Resource Management Project (FRMP) (1998–2006)* is supported by an ADB loan and implemented through the DA-BFAR. This program is a continuation of the FSP that addressed the need for CRM in 12 bays. The focus of field implementation is empowering coastal communities and local governments to manage their fisheries and other coastal resources. One notable change from FSP is that coastal resource assessments are being done with community participation in the planning and implementation process. The FRMP supports CRM as a basic service of local governments that includes MPAs and fisheries law enforcement as ''best practices'' for CRM in its project areas.

(9) *The Bohol Marine Triangle (BMT) Project (2000–2006)* is a United Nations Development Program-Global Environment Facility (UNDP-GEF) funded project to conserve the globally significant biodiversity resources in the southern Bohol Island, Central Visayas. The project goal is to create an effective, equitable and sustainable planning, implementation, enforcement and monitoring system for biodiversity conservation. The project is guided by an integrated CRM planning process in three municipalities and two smaller islands to strengthen government and community institutions in the management of their resources. The project also works with communities to assist them to establish effective MPAs and to implement a sustainable harvest schemes for all coastal resources. Integration of tourism is also a key strategy.

(10) *The Local Governance for Coastal Management Project (LGCMP) (2002–2007)* is supported by the Packard Foundation through the Coastal Conservation and Education Foundation Inc., an NGO based in Cebu City. The mission of the project is to strengthen the capabilities of local governments and stakeholders in 14 municipalities to mainstream CRM in their development agenda. The approach is to improve local governance through the implementation of a CRM benchmark system initiated by the CRMPhil of DENR and to encourage integration among the local governments for fisheries management. Project activities include assisting local governments to develop and adopt a 5-year CRM plan, organize one or more CRM implementation organizations, allocate budget and personnel for implementation, implement two or more CRM "best practices" such as MPAs, fisheries management and coastal law enforcement and assume annual monitoring and evaluation functions.

(11) *The Fisheries Improved for Sustainable Harvests (FISH) Project (2004–2010)* is a technical assistance project of DA-BFAR funded by USAID. The objective of the FISH project is to conserve biological diversity in four biologically and economic important marine ecosystems in the Philippines, as measured by an increase in fish stocks and the maintenance of the coastal resources, such as coral reefs and mangroves, that support them. FISH seeks a more sustainable yield of marine fish stocks based on the use of improved management practices with a long-term view of sustainability and clearly defined resource uses rights. Project components include strengthening the management capability of local and national institutions, improving national and local policies for more sustainable use, and building national and local support for more responsible management of coastal resources and marine fish stocks.

(12) *The Integrated Coastal Resource Management Project (ICRMP) (2005–2009)* will be supported by an ADB loan and GEF grant and implemented by DENR to improve the condition of coastal and marine resources and thereby reducing the incidence of poverty. In six provinces and five priority biodiversity conservation sites, the project will strengthen institutional development and coordination between agencies and develop national CRM policy. CRM and biodiversity conservation activities will be implemented at the regional, provincial, and municipal levels to establish MPAs and reduce the incidence of illegal fishing and resource use activities. LGUs will achieve measurable benchmarks in improved

CRM capacity. Enterprise development and poverty reduction interventions will develop sustainable enterprises and livelihoods for local communities. Finally, small-scale infrastructure and social services will be provided to improve quality of life for coastal residents and support an integrated approach to resource management.

3.2. Indonesian projects (chronological by start date)

(1) *The Segara Anakan, Cilacap, Java, projects (SAP) (1984–1992; 1996–2004)* are two large-scale ICM projects. The first was the Coastal Resources Management Project (1984–1992) implemented by the Directorate General of Fisheries and supported by USAID. The objectives were to establish a land-use zoning scheme that satisfies the different resource users; to preserve ecologically important areas of coastal forest, estuarine and marine ecosystems; and to settle land-use conflicts. A major result was a comprehensive ICM plan. Interventions included training in aquaculture, mangrove management, environmental education, livelihood activities for women and small loans for aquaculture. The second project was the Segara Anakan Conservation and Development Project (1996–2004) implemented by the Directorate General of Regional Development and supported by an ADB loan. Primary objectives included water resources management and sedimentation control; rehabilitation and management of mangrove through community participation; and capacity building and education.

(2) *The Bunaken National Park Management Projects (BNP) (1991–present)* were implemented through the Natural Resource Management Program (NRMP) of USAID. ICM activities started in Bunaken when it was declared a national park. The project developed a 25-year management plan for Bunaken Park. Many aspects of this plan have been revised and developed including, over the past 4 years, success in strengthening the park's enforcement system, establishing a sustainable financing mechanism, and conducting a participatory re-zonation process. While the NRMP or the Bunaken projects are not self-described as ICM, they include activities—such as multi-sectoral planning, livelihood generation, protected area establishment, private–public sector collaboration, ecotourism development, education, zonation and enforcement—in coastal and marine areas that are the hallmark of ICM programs throughout the region. Bunaken Park management has reduced illegal fishing and coral destruction, while supporting international diver tourism. Nevertheless, conflicts between the park management and traditional resident resource users remain.

(3) *Komodo Island National Marine Park (KINMP) (1995–present)* is a Nature Conservancy (TNC) project to assist the Indonesian Park Authority to develop and implement a 25-year management plan. In 2000, the government formally adopted the plan, which provides the legal framework for the regulation of all activities in the Park. The five major conservation strategies in the plan include coral and fish monitoring programs, community outreach and conservation awareness campaigns, sustainable livelihood activities, a cross-sector patrolling and enforcement program, and ecotourism development. TNC's present activities are to ensure long-term management of Komodo National Park by strengthening community

participation, promoting environmentally sensitive tourism development, encouraging conservation-enhancing livelihoods and developing self-financing mechanisms for the park.

(4) *Proyek Pesisir, Coastal Resource Management Project, Indonesia (CRMIndo) (1997–2003)* is a USAID funded project capitalizing on the institutional reform in Indonesia's governance structures toward decentralization by strengthening coastal resources planning and management. Models of participatory and community-based coastal resources management initiatives were developed to serve as best practices in CRM to be adopted widely within the country by government and non-government institutions engaged in coastal management initiatives and programs. Parallel activities fostered the development of national coastal policy. One of the best practices resulting from the project was the formulation and implementation of village-based ICM plans and MPAs.

(5) *Coral Reef Rehabilitation and Management Project (COREMAP) (1998–2013)* is a national program aimed at the management of coral reefs in the Indonesian archipelago. Funding is from the WB, ADB and AusAid. The primary goal is to protect, rehabilitate and sustain marine ecosystem use throughout Indonesia. This is accomplished by strengthening national policies and through decentralized community-based resource management systems. Project activities are implemented in three phases starting with capability building for coastal management at the central, provincial and local levels along with management of coastal resources at the local government and community level. Project activities include raising community awareness, fostering active participation, increasing institutional capacity and promoting inter-institutional coordination in planning and implementation of laws. Reef monitoring is encouraged through cross-sector participation of national and regional governments, enforcement authorities, the private sector and NGOs.

4. ICM sustainability factors and existing and proposed ICM projects/programs

In Section 2, ICM sustainability factors that reflect the findings of the recently concluded ICM-SRP were discussed. In Section 3, seventeen past, ongoing and proposed ICM projects in Indonesia and Philippines are described. Virtually all major projects in these two countries that have or purport to achieve ICM in some manner are included.[1] Donor, years of operation and objectives or basic activities being implemented are highlighted. In this section, these 17 ICM projects or programs are analyzed in order to better understand how they incorporate ICM sustainability factors.[2] Each project is rated according to the extent that

[1]Five of the 17 projects were included in the ICM-SRP data collection and analysis.

[2]"Sustainability factors" are those factors drawn from the ICM-SRP that point to long-term and persistent implementation of ICM but are not necessarily synonymous with sustainable use of coastal resources.

sustainability factors are being incorporated in design or are reflected in implementation on a scale of 1–3 (3 being the highest rating).[3] The intent is not to evaluate projects per se but to determine to what extent ICM projects design has evolved to incorporate features that tend to support more sustainability processes and program continuity. This analysis depends on various sources of information about the particular ICM project, not all of which are quantifiable. Because the authors are familiar with all the projects described, the analysis of the degree of incorporation of sustainability factors depends largely on the authors' knowledge and experience in the field. References are also used when available to support the data in Table 1 and the numerical rating helps in showing differences between and among the various projects.

Table 1 reveals several trends. It highlights those sustainability factors that are generally being addressed. It also allows us to see how well more recent projects are doing with respect to learning about sustainability factors and incorporating them into their projects. The sustainability factors that are receiving the most attention across the board, from the most common, are:

- education and awareness level raising,
- link of management to biophysical change,
- stakeholder participation in ICM decision-making process,
- legal and policy framework development.

Those that are receiving the least attention among all the projects analyzed are:

- participation of the private sector,
- designing a successful project exit strategy,
- improving economic returns and income generation,
- building capacity for law enforcement,
- ensuring institutional capacity beyond leadership change.

The distinction between the two lists reflects their relative importance in previous research on sustainable management. Factors on the first list have long been recognized as important to successful coastal management activities. However, recent research has emphasized the importance of the second list of factors [47–49]. These factors also tend to reflect weaknesses in most developing country settings such as poor law enforcement, poverty, the unpredictability of local and national politics and changes in leadership. Successful project exit strategies and increased participation by the private sector may also reflect either the project design or a combination of design and the implementing entity bias of government, in most cases.

[3]The 1, 2 or 3 levels represent: (1) very low or absent level of incorporation in project; (2) moderate level; (3) high or superior level of incorporation or achievement of factor.

Table 1
Extent of sustainability factors being incorporated in ICM project design and/or implementation

Project[a]	Sustainability factors									Total Points (27)	Average
	Link of management to biophysical change	Stakeholder participation in ICM decision making process	Improved economic returns and income generation	Legal and policy framework	Capacity for law enforcement	Institutional continuity beyond leadership change	Including the private sector	Successful project exit strategy	Education and awareness level raising		
Philippines											
1. CVRP	3	2	2	1	1	1	1	1	2	14	1.6
2. MCDP	3	3	3	2	1	2	1	3	3	21	2.3
3. LGCAMP	1	2	1	3	1	2	1	2	3	16	1.8
4. FSP	2	3	2	1	1	2	1	1	3	16	1.8
5. TNMP	3	2	3	3	3	2	2	2	2	22	2.4
6. PEMSEA	2	2	1	3	1	2	3	2	3	19	2.1
7. CRMPhil	3	3	2	3	3	2	3	3	3	25	2.8
8. FRMP	3	3	2	2	2	2	1	1	2	18	2.0
9. BMT	2	3	2	2	2	2	2	2	3	20	2.2
10. LGCMP	3	3	1	3	3	3	1	2	2	21	2.3
11. FISH	3	2	2	3	3	2	2	2	3	22	2.4
12. ICRMP	3	3	3	3	2	3	1	2	2	22	2.4

Indonesia											
1. SAP	2	2	2	2	1	2	1	2	2	16	1.8
2. BNP	3	2	2	3	3	2	3	2	3	23	2.6
3. KINMP	3	2	3	1	3	1	2	1	3	19	2.1
4. CRMIndo	2	3	1	3	2	3	1	3	3	21	2.3
5. COREMAP	2	2	2	2	2	2	1	1	2	16	1.8
Total points (51)	43	42	34	40	34	35	27	32	44		
Average	2.5	2.5	2.0	2.4	2.0	2.1	1.6	1.9	2.6		

3 = High degree* of ICM Sustainability Factor featured in project's design and objectives.
2 = Medium degree* of ICM Sustainability Factor featured in project's design and objectives.
1 = Low degree* of ICM Sustainability Factor featured in project's design and objectives.
*Degree of applicability determined through analysis of project components, activities, achievements and outputs.

[a] *Philippine projects*: 1. Central Visayas Regional Project (CVRP); 2. Marine Conservation and Development Program (MCDP); 3. Lingayen Gulf Coastal Area Management Program (LGCAMP); 4. Fishery Sector Program (FSP); 5. Tubbataha National Marine Park (TNMP) Project; 6. Partnership for Environmental Management of the Seas of East Asia (PEMSEA); 7. Coastal Resource Management Project (CRMPhil); 8. Fishery Resource Management Project (FRMP); 9. Bohol Marine Triangle Project (BMT); 10. Local Governance for Coastal Management Project (LGCMP); 11. Fisheries Improved for Sustainable Harvests (FISH); 12. Integrated Coastal Resource Management Project (ICRMP). *Indonesian projects*: 1. Segara Anakan, Cilacap ICM Projects (SAP); 2. Bunaken National Park ICM Projects (BNP); 3. Komodo National Marine Park (KNMP) Project; 4. Coastal Resource Management Project (CRMIndo); 5. Coral Reef Management Project (COREMAP).

5. Links between ICM sustainability findings and project successes

Table 1 also reveals further insights about sustainability and project success. First, there is a discernable trend to higher project scores in more recent years. This indicates some learning is occurring about what constitutes a sustainable project. All the projects with average scores of 2.3[4] or more are projects that are either still operating, are nearing their termination or are still in the design phase with several exceptions that are interesting to analyze. First, the MCDP with a score of 2.3 ended in 1986 but was a leader of Philippines community-based ICM with local management enduring to the present in two out of three sites. The current projects with average scores less than 2.3 are four: COREMAP, FRMP, BMT and PEMSEA. These four projects, while well designed, have had some problems with implementation at the field level. COREMAP and FRMP are large government loan projects that have been constrained in their ability to incorporate sustainability design principles. Both projects are implemented by government agencies that are somewhat inflexible in project implementation. BMT, with an excellent design and supported by the GEF, has also been constrained by some implementation problems. Finally, PEMSEA, although a multinational project, is rated based on its Philippine site of Batangas Bay that has had difficulty achieving sustainability within the local government of the area.

Four projects with average scores of 1.8 or less, CVRP, SAP, LGCAMP and FSP were started in the 1980s and have already ended. These all reflect a design that could not benefit from the present lessons on sustainability. They operated at an early phase of ICM in these countries when decentralized governance processes were difficult to catalyze. In this regard, it is logical that their scores are lower and show some serious problems in being sustainable beyond their project life. These projects informed future ICM projects and, therefore, served a key role in the development of new planning models.

Finally, the projects with average scores of 2.3 or more (MCDP, BNP, CRMPhils, CRMIndo, TNMP, LGCMP, FISH and ICRMP) more fully reflect the sustainability lessons discussed herein. However since they are not all completed or even started in the case of ICRMP, the proof of their ability to carry out their designs is untested. Those with known and proven track records are MCDP, BNP, CRMPhils, CRMIndo, TNMP and LGCMP, all of which have or are operating quite successfully at the field level, mainly through local government systems and to some extent at national levels. Table 1 highlights their strengths and relative weaknesses and also shows that unless a project considers all the various sustainability factors in a meaningful manner, it quickly falls short of goals. The only factor that receives a score of 1 in any of these leading projects is the inclusion of the private sector in its design or implementation. This highlights a gap for future projects to consider.

[4]In all, 2.3 was selected because it represents a midpoint of scores with 9 projects below and 8 equal or above.

6. Are broad donor success indicators being incorporated into ICM projects?

Most donors have fairly broad development objectives that they like to see reflected to some extent in the projects they support. The ADB, e.g., screens all its projects for assisting with poverty alleviation. The WB has strict guidelines on environmental impact and improvement in project design. Reproductive health is quickly rising as an important component of many donor projects. The extent that these objectives and success indicators are being addressed and are linked to project sustainability factors are discussed in this section.

6.1. Biophysical improvement indicators

Virtually all the ICM projects analyzed above include one or more indicators for biophysical improvement as a criterion for project success. The FISH Project, e.g., has an overall objective to achieve a 10% increase in fish biomass within project areas as measured through changes in fish density, biomass and catch both in near-shore and offshore fisheries and habitats. Also, the proposed ICRMP of ADB for the Philippines targets a 10% improvement over baseline in habitat quality parameters for coral reefs, mangroves and fisheries in project areas. These indicators are highlighted as being of overall importance since it is assumed that the most difficult objectives to achieve are these that require an integrated array of field interventions to achieve biophysical improvement. In this manner, the project cannot avoid its ultimate reason for existence. The utilization of such biophysical information within the planning process needs improvement. In other words, such data should not be collected for their own sake.

These indicators are also usually expressed in straightforward terms so that there is not much debate over how they are measured. Sampling techniques are well developed for fish density and biomass, species richness and benthic habitat condition so that the baseline assessments can set the standard against which the project is measured. Also, using these indicators often creates an opportunity to engage the local communities and government in their measurement with benefits to education and awareness. In addition, such indicators of success are increasingly being expressed within local and national government development plans so that there is consistency with development project objectives and means of measurement.

Several of the projects analyzed do not include biophysical indicators as the ultimate measure of their success but rather focus on governance indicators. The BMT Project and the CRMIndo focus more on the establishment and effective management of marine project areas (MPA) as a final outcome. Such an objective can also be measured in quantitative terms and can be aligned with local government objectives. Within that context, biophysical improvements are measured but not used as the ultimate measure of accomplishment with the thinking that an effective MPA has many benefits in addition to biophysical improvement of the habitat. However, objective means of verification of governance indicators are not standardized or agreed upon among the project implementers and participants [50]. Combining the two types of indicators is probably useful.

6.2. Financial return, cost benefit analysis and counterpart funding

All bank loans require that financial returns be analyzed in the context of benefits and costs. Equally, counterpart funding of local and national governments should be a prerequisite to the funding for the project. The ADB and WB have incorporated these factors into all the projects recently funded. Grant providers such as USAID and GEF also require these aspects to be addressed along with most other bilateral donors. These requirements can be addressed in project proposals where the designers often exert much effort in satisfying these needs through sophisticated financial and cost/benefit analysis (CBA). In some cases though, it is doubtful that the true costs of management are reflected, and the benefits, although economically correct, might not be seen in actual return at the local level. This has implications for government counterpart that may not materialize in the quantities intended in a project design. A case in point is the FRMP that has had trouble producing the government counterpart promised at both local and national levels. The problem might be in how to measure these factors so they are meaningful in the local implementation context, and not only in bank or other donor evaluation committee terms. Also, expectations at the outset need to be realistic.

The COREMAP in Indonesia incorporated all the usual financial analyses within its costly design. But in the final evaluation, the project results have been disappointing and reflect naivety on the part of the designers and an inability to develop an appropriate process for a challenging context. The design probably lacked the benefit of more real experience from the field and fully understanding the challenges of operation in Indonesia. In this sense, it must be remembered that financial analysis assumes that particular project goals and impacts are realized. If goals are not met, the financial justifications for projects can be off the mark. FSP, FRMP, CVRP and COREMAP have not met particular goals, thus undermining CBA analyses that were used to justify their inception. Such matters are not trivial considering the sums of loan behind such projects. The solution may lay with making more conservative assumptions about project outcomes and by not underestimating the difficulty of accomplishing objectives that are needed to convince donors to support the project in the first place.

6.3. Poverty reduction through livelihood and food security

Most projects discussed above do not address poverty directly but rather through the benefits derived from improving the management of environmental resources. Coastal resource management enhances fisheries that in turn provide livelihood and food. But the root of the problem in Indonesia and Philippines is that too many people depend on coastal resources as their main source of income. Without effective local management there are no mechanisms to keep individuals from over-fishing. Thus, the need is to provide truly alternative sources of income, to relieve dependence on coastal resources.

To the extent that donors increasingly realize the need to relieve dependence on and limit access to coastal resources, projects try to incorporate enterprise

development and poverty alleviation components into the project. The newly designed ICRMP for Philippines has a major "enterprise development and poverty reduction" component. In addition, it includes a "social services and small-scale infrastructure for environmental protection" component that targets improvement in quality of life of coastal residents through pollution control, social infrastructure, population management and a scholarship program [51]. The CRMPhil also exerted major effort to develop coastal ecotourism destinations and selected environment-friendly forms of aquaculture as alternative occupations for coastal residents. But these efforts, although well meaning and important, do not sufficiently address the need to reduce the absolute pressure on coastal resources. Nevertheless, they have contributed and are seen as important components of an integrated project to build sustainability.

Although ICM implies a truly integrated approach to resource management that could be construed to include a full economic development program to address poverty, no ICM project has gone this far. Rather the well-designed and implemented projects have been addressing, very strategically, a small range of economic stimulus packages that are complementary to good coastal management practices. These include user fees for MPAs, license fees, environment-friendly marine tourism and appropriate aquaculture such as seaweed farming among others. But these do not often employ people to the extent required to relieve human dependence of coastal resources.

6.4. National and local policy and institutional support systems in place

A strong case has been made earlier for the need for having supportive policies and institutions in place as a prerequisite for effective ICM implementation. These factors do not guarantee full success but without them, the chances for success are much reduced. Thus, to what extent do ICM projects help to ensure that policies are aligned with the needs and the institutions are capacitated to implement ICM? The answer is not easy in that the larger projects in principle address national and local policy and institutional issues. But project evaluations often report relative failure in the policy arena. The Fisheries projects in both Philippines and Indonesia have not contributed sufficiently to national policy reform to address the growing issue of over-fishing, open access and poor law enforcement. The FSP initiated the Philippine Fisheries Code that was adopted in 1998, 9 years after the first draft of the code. Thus, although passed, revisions were needed as soon as it was issued that were not addressed in 2004.

Institutional weakness in both countries in national government have not changed significantly in 20 years despite major donor contributions and, in fact, the proportion of national budgets being allocated for fisheries management has declined as the problem has expanded. In contrast, some smaller and more strategic projects, have contributed more to policy and institutional development. National ICM frameworks now exist in both countries as a result of assistance from the CRMPhil and CRMIndo of USAID. Equally, the knowledge about and effectiveness of MPAs in both countries has increased markedly in recent years through the

support of various donor projects including those supported by GEF, WWF, USAID, other bilateral missions and smaller NGOs.

In short, almost all projects recognize the need for improving policies and institutions but only a few are effective at achieving these goals. This might be where truly effective projects can be recognized since the art of policy reform cannot be guaranteed within project designs. Rather it results from the quality and knowledge of project staff and their ability to partner with host counterpart agencies and personnel. The CRMPhil was able to work closely within the DENR to sponsor several important policy reforms that helped the agency move forward in coastal management. The process was a challenging, but worthwhile, endeavor. The DENR set up a Coastal and Marine Management Office as an outgrowth of the CRMPhil that is beginning to institutionalize ICM functions nationwide. The ICRMP of ADB plans to capitalize on this institutionalization and support it beyond the life of CRMPhil.

6.5. *Population management*

The connection between population growth and depletion of coastal resources is increasingly being made in research on the status of coastal resources. The World Resources Institute highlighted this in its "Reefs at Risk" report by showing the increasing density of people inhabiting shorelines that are dependent on fisheries for food and livelihood [52]. This and other reports are encouraging the bigger picture of balancing human population growth with resource use and management to be incorporated into ICM projects. The ICRMP and FISH project in Philippines, both have specific reproductive health components that integrate CRM with population management in an activity termed integrated population and coastal resource management. Others are initiating activities in this area and are at least expressing the linkages between population management and natural resource sustainability. Such informed thinking can also begin to exert pressure on national policies where they are not considering this matter.

7. Conclusion

That ICM is evolving and learning from experience is one important conclusion that can be drawn from this paper on the sustainability of ICM. Also, the factors most important for sustainability tend to vary from context to context. The reality that it takes time to learn how sustainability will be realized is not to dismiss ICM, but rather to be frank about the true difficulties of explaining sustainable success for any given ICM project or program. That learning is occurring by more recent projects is an encouraging trend. Our predictive ability is much improved over a few years ago when we lacked the tremendous experience base that is represented by the track records of past and ongoing projects in Philippines and Indonesia. The basic tenets of sustainability have been well elaborated above. An important lesson is that a majority of these tenets as described and analyzed must be present in well-designed

ICM projects. This implies being "integrated" in a variety of ways that begin to satisfy all the needs of a country and/or regional and local situation including basic parameters of coastal and marine ecosystems. The policies, laws, governance structure, culture, relative economic development, environmental condition, project design and personnel, type of funding arrangements, administration must all be taken into consideration during project design and implementation. Yet, how these ingredients are combined will certainly vary.

Continuing monitoring and evaluation of existing and new ICM projects will provide new insights into what constitutes sustainability. Of course the bottom line in all ICM efforts is that the quality of life of coastal communities stabilizes or improves through the maintenance and enhancement of coastal ecosystems, in all their varied forms. Many opportunities for research are open to refine and improve upon the points made in this paper. Yet, even if we just act on what we already know our coastal environments and the human life they support, will be much improved over the past decades of decline.

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